

Washington State Status Report for the Mardon Skipper



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Washington Department of
FISH AND WILDLIFE
Wildlife Management Program

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The Washington Department of Fish and Wildlife maintains a list of endangered, threatened and sensitive species (Washington Administrative Codes 232-12-014 and 232-12-011, Appendix B). In 1990, the Washington Fish and Wildlife Commission adopted listing procedures developed by a group of citizens, interest groups, and state and federal agencies (Washington Administrative Code 232-12-297, Appendix B). The procedures include how species listing will be initiated, criteria for listing and delisting, public review and recovery and management of listed species.

The first step in the process is to develop a preliminary species status report. The report includes a review of information relevant to the species' status in Washington and addresses factors affecting its status including, but not limited to: historic, current, and future species population trends, natural history including ecological relationships, historic and current habitat trends, population demographics and their relationship to long-term sustainability, and historic and current species management activities.

The procedures then provide for a 90-day public review opportunity for interested parties to submit new scientific data relevant to the status report, classification recommendation, and any State Environmental Policy Act findings. During the 90-day review period, the Department holds at least two public meetings, one in eastern Washington and one in western Washington. At the close of the comment period, the Department completes the Final Status Report and Listing Recommendation for presentation to the Washington Fish and Wildlife Commission. The Final Report and Recommendation are then released 30 days prior to the Commission presentation for public review.

This is the Final Status Report for the mardon skipper. **Submit written comments on this report by 30 November 1999 to: Endangered Species Program Manager, Washington Department of Fish and Wildlife, 600 Capitol Way N, Olympia, WA 98501-1091.** The Department will present the results of this status review to the Fish and Wildlife Commission for action at the December 10-11, 1999 meeting.

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EXECUTIVE SUMMARY

The mardon skipper is a small, tawny-orange butterfly currently found at only four, small, geographically disjunct areas in Washington, Oregon, and California. In Washington, nine of 18 historic sites are known to be occupied. Based on several years of repeated survey effort, it has been concluded that populations at five historic sites have been extirpated. Four of these are in south Puget Sound and one is in the southern Cascades. The current status of four other sites is uncertain. Grasslands of the Puget prairies and Washington's southern Cascades are believed to support just a few hundred individuals.

In the Puget lowlands, the mardon skipper is found on glacial outwash prairies where it inhabits open grasslands with abundant Idaho fescue interspersed with early blue violet. In the southern Cascades, the mardon skipper is found in open, fescue grasslands within Ponderosa pine savanna/woodland, at elevations ranging from 1900' to 5100'. South Cascade sites vary in size from small, ½ acre or less meadows, to large grassland complexes, and site conditions range from dry, open ridgetops, to areas associated with wetlands or riparian habitats. Within these southern Cascade and Puget prairie grassland environments, a variety of nectar source plants are important. The short, open stature of native, fescue bunchgrass stands allows mardon skippers to access nectar and oviposition plants.

During the past 150 years, native grasslands have been developed, fragmented, and degraded. Fire historically played an important role in maintaining grassland plant communities. More than 95% of the original prairie grasslands are gone from western Washington. Mardon skippers were likely more widespread and abundant prior to large-scale loss of their open, fescue dominated, grassland habitat.

The grassland and savanna landscapes upon which mardon skippers depend are threatened today by forest encroachment, invasion by native and non-native plants, development, recreational activities, grazing, agricultural practices, and application of herbicides. The butterflies are threatened by insecticides, control practices for invasive plants, military training, fire, and recreational activities.

The extant Washington mardon skipper population consists of a few hundred individuals present at only nine geographically isolated sites, three in Puget Sound and six in the southern Cascades. Many of these sites are under assault from invasive non-native plants, and have human uses which are incompatible with butterfly management. At none of the mardon skipper sites does a mandate and dedicated funding occur for managing the site for mardon skipper habitat.

Due to the mardon skipper's small population size, limited distribution, isolation, and the numerous factors threatening the species and its remaining habitat, the Department believes the species is vulnerable to extirpation and the Puget Sound population in particular, is seriously threatened with extinction. The Department, therefore, recommends the mardon skipper be classified as a State Endangered species.

TAXONOMY

The mardon skipper (*Polites mardon*) is a butterfly in the family HesperIIDae (skippers) and the subfamily HesperIIDae (grass skippers). It was first described by W. H. Edwards (1881) from specimens taken near Tenino, Thurston County, Washington by H. K. Morrison (Dornfeld 1980). Subspecific distinctions within *Polites mardon* have recently been discussed by Mattoon et al. (1998), who proposes naming the Washington population *Polites mardon mardon*, and the Oregon and California populations, *Polites mardon klamathensis*.

DESCRIPTION

The mardon skipper is a small (20-24 mm; <1 in), tawny-orange butterfly with a stout, hairy body. The upper surface of both wings is orange with broad dark borders. The wings from below are light tan-orange with a distinctive pattern of light-yellow to white rectangular spots. Males are smaller than females and have a small, dark brown streak (stigma) on the upper surface of the forewing. Like most members of the HesperIIDae, mardon skippers have a fast, skipping flight, bent antennae clubs, and a characteristic basking posture in which the forewings are held at a 45-degree angle and the hind wings are fully spread.

The mardon skipper can be difficult to distinguish from two similar skippers. The woodland skipper (*Ochlodes sylvanoides*) is widespread and common across Washington. Its flight period overlaps with that of the mardon skipper at higher elevations. The Sonora skipper (*Polites sonora*) is an uncommon grassland species in Washington. Sonora and mardon skipper flight periods often overlap. Each of these species have slightly different wing patterns; detailed identifying features of all three skippers are found in standard field guides (e.g., Pyle 1981, Tilden and Smith 1986).

GEOGRAPHIC DISTRIBUTION

In this report, “area” refers to geographically disjunct regions and “site” refers to specific locales where mardon skippers have been documented. Mardon skipper populations at remaining identified Washington sites are thought to be isolated from other Washington and Oregon sites. Before the grassland landscapes were developed, degraded, and fragmented, mardon skipper populations were likely less insular.

North America

The mardon skipper is a northwestern butterfly. Its disjunct range includes two areas in Washington, an area in the Siskiyou Mountains of southern Oregon, and an area on the coast of northern California.

Washington

Mardon skippers occur at two generalized areas in Washington: Puget Prairie and the South Cascades (Fig. 1). Puget Prairie encompasses sites in Thurston and Pierce counties, while the South Cascades area encompasses sites in Klickitat and Yakima counties.

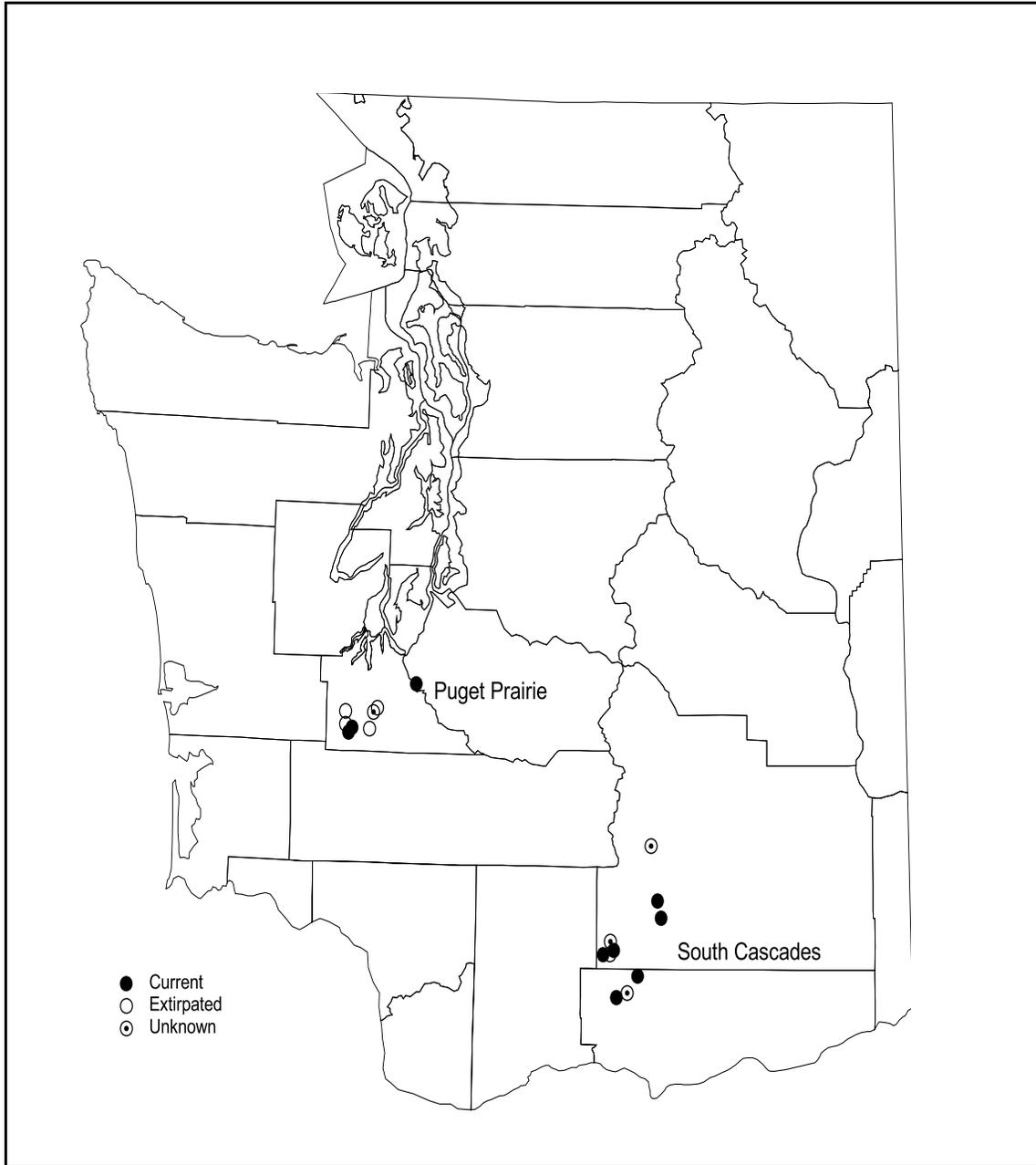


Figure 1. Mardon skipper sites in Washington.

Historically, mardon skippers were collected from three counties: Thurston, Klickitat, and Yakima. The Northwest Lepidoptera Database (The Evergreen Aurelians 1996) contains 35 records for mardon skippers collected in Washington between 1929-1995 (Table 1). The database includes five museum specimens collected from Thurston County in 1929, 1951, 1952, 1976, and one unknown date: four of the specimens were at the American Museum of Natural History, and one (1976) was in the University of Washington collection.

Table 1. Mardon skipper records for Washington 1929-1995 (The Evergreen Aurelians 1996), organized by site with original locale descriptions converted to WDFW standardized site names.

Site Name	County	Date ^b	Year	Elevation (ft)	Number of adults
Olympia ^a	Thurston	May	na	0-300	-
Grand Mound ^a	Thurston	na	na	160	-
Grand Mound ^a	Thurston	26 May	1929	160	-
Puget Prairie 5	Thurston	14 May	1988	250	1
Puget Prairie 6	Thurston	18 May	1985	85-100	1
Puget Prairie 7	Thurston	21 May	1983	290	2
Puget Prairie 7	Thurston	24 May	1983	290	120+
Puget Prairie 7	Thurston	19 May	1985	290	72
Puget Prairie 7	Thurston	9 June	1991	290	1
Puget Prairie 7	Thurston	16 May	1992	290	1
Puget Prairie 8	Thurston	5 May	na	250	-
Puget Prairie 8	Thurston	29 May	1951	250	-
Puget Prairie 8	Thurston	30 May	1951	250	-
Puget Prairie 8	Thurston	1 June	1952	250	-
Puget Prairie 8	Thurston	11 May	1972	250	6
Puget Prairie 8	Thurston	5 June	1976	250	4
Puget Prairie 8	Thurston	20 May	1978	250	13
Puget Prairie 8	Thurston	24 May	1983	230	20
Puget Prairie 8	Thurston	29 May	1988	na	3
South Cascades 1	Klickitat	3 June	1995	na	-
South Cascades 3	Klickitat	19 June	1984	na	1
South Cascades 4	Yakima	25 June	1978	3600	10
South Cascades 4	Yakima	30 June	1978	3600	50+
South Cascades 4	Yakima	24 June	1981	3600	24
South Cascades 4	Yakima	5 July	1984	3600	9
South Cascades 6	Yakima	na	na	na	2
South Cascades 6	Yakima	6 July	1964	4800-5111	-
South Cascades 6	Yakima	9&22 June	1965	“	-
South Cascades 6	Yakima	2 July	1965	“	-
South Cascades 6	Yakima	25 June	1966	“	-
South Cascades 6	Yakima	9 July	1966	“	-
South Cascades 8	Yakima	11 July	1981	3500	3
South Cascades 8	Yakima	24 June	1987	+5000	2
South Cascades 9	Yakima	8 August	1955	na	2
South Cascades 10	Yakima	23 July	1977	4650-4750	2

^a general locale, unable to assign WDFW site name

^b na = information not available

Mardon skippers have historically been located at the Puget Prairie 3 site (R. Pyle and J. Partlow, personal communications); ‘Grand Mound’ locales in The Northwest Lepidoptera Database (The Evergreen Aurelians 1996) likely refer to this site (Table 1). More recently, the species was documented there by Char and Boersma (1995) in 1993 and 1994. Mardon skippers were found at the Puget Prairie 4 site in the early 1990s (R. Pyle, personal communications). The species was last observed there in 1994 by Char and Boersma (1995). Populations of mardon skippers were first located at Puget Prairie 1 and 2 sites in 1997 during expanded searches by The Nature Conservancy of Washington (TNC), Department of Natural Resources Natural Heritage Program (DNR), and Department of Fish and Wildlife (WDFW). Pyle discovered the mardon skipper population at the South Cascades 2 site in 1995 (R. Pyle, personal communications). South Cascades sites 5 and 7 were located in 1998 during a search for new sites in this area (A. Potter, personal observation). Recent searches have failed to locate mardon skippers at four Puget Sound (Puget Prairie 4, 5, 6, and 7) and one southern Cascade (South Cascades 8) sites.

NATURAL HISTORY

Annual Cycle

Mardon skippers are univoltine; they complete one life cycle annually. In Washington, adults typically emerge between May and July for a month-long flight period. Emergence dates are earlier at low-elevation Puget Prairie sites than at South Cascades sites. The mardon skipper is a sedentary butterfly; it does not migrate. Dispersal distance is unknown, but is believed to be limited. After mating, females deposit their eggs into tufts of native bunchgrass (*Festuca* spp.) (A. Potter, personal observation). Eggs hatch after 6 or 7 days (Newcomer 1966). Larvae feed on fescue grass for approximately 3 months (Dornfeld 1980). Pupae hibernate through winter, probably in a loose cocoon in the grass (Newcomer 1966).

Food

Adults feed on flower nectar from a variety of plants. At one Puget Prairie site, early blue violet (*Viola adunca*) was strongly preferred as a nectar source and Scot’s broom (*Cytisus scoparius*) was strongly avoided (Potter et al. 1999). Large numbers of mardon skippers were observed nectaring in dense patches of *Viola adunca*. Nectaring was also observed on common vetch (*Vicia sativa*), prairie lupine (*Lupinus lepidus*), and Idaho blue-eyed-grass (*Sisyrinchium idahoense*).

At South Cascades sites, adults have been observed nectaring on vetch (*Vicia* spp.), penstemon (*Penstemon* spp.), sego lily (*Calochortus* spp.), and wallflower (*Erysimum capitatum*) (Newcomer 1966; R. M. Pyle, unpublished report; A. Potter, personal observation). Mardon skipper larvae feed on native bunchgrass, including Idaho fescue (*Festuca idahoensis*) and, probably, red fescue (*Festuca rubra*) (Pyle 1989; A. Potter, personal observation).

HABITAT REQUIREMENTS

In the Puget lowlands, the mardon skipper is found on glacial outwash grasslands, often referred to as prairies. In a study of habitat quality at one Puget prairie site (Potter et al. 1999), mardon skippers used open grasslands with abundant *Festuca idahoensis* interspersed with *Viola adunca*. They were found in areas with only limited cover of Scot's broom. The short, open stature of native *Festuca* stands allows mardon skippers access to their nectar and oviposition plants.

In the southern Cascades, the mardon skipper is found in open, grassland sites within the Ponderosa pine (*Pinus ponderosa*) savanna/woodland, at elevations ranging from 1900' to 5100'. South Cascades sites vary in size from small, ½ acre or less meadows, to larger grassland complexes. Site conditions range from dry, open ridgetops to areas associated with wetlands or riparian habitats. Within these southern Cascade and Puget Sound grassland environments, a variety of adult nectar sources are important habitat components.

POPULATION STATUS

The historic range and abundance of mardon skippers in Washington are unknown. This species was sought by lepidopterists in the late 19th and early 20th century, but it is small and nondescript and may have been overlooked. No estimates of abundance are known to have been made at any site prior to 1980. Nevertheless, the species is believed to have declined severely as the habitats with which it is associated have been lost.

Washington's present-day mardon skipper population is estimated to comprise a few hundred individuals at 9 currently-occupied sites (Table 2). Population estimates are derived from adult counts conducted during site search surveys; high count numbers are reported as number of adults observed (Table 2). Despite intensive surveys in recent years, mardon skippers have not been found at five historic sites (four in the Puget Prairie and one in the South Cascades), and they are thought to be extirpated (Table 2). Four additional sites (one in the Puget Prairie and three in the South Cascades) have not been surveyed adequately to determine current population status. The Washington population estimate is approximate, because some sites have not been intensively surveyed, insect populations fluctuate widely, methods for formally estimating abundance have not been devised, and undiscovered sites may exist in the southern Cascades.

Three or four mardon skipper sites are found in the Siskiyou Mountains of southern Oregon, within a 10-mile radius. An estimated 200 individuals were present at one site in 1991 (P. Runquist, personal communication). Other sites, most recently visited in 1991, hosted a few individuals. The single known coastal California site, supports dozens of individuals during peak years in its 1-2 acre core area (S. Mattoon and K. Hanson, personal communications). Mattoon et al. (1998) recently proposed these Oregon and California populations be considered a separate subspecies, *Polites mardon klamathensis*.

Table 2. 1997-98 survey results and status of Washington mardon skipper sites.

Site Name	Number of Adults				Observer(s) ^b	Last Active	Last Survey ^c	Status
	Observed ^a		Estimated					
	1997	1998	1997	1998				
Puget Prairie 1	50 (3)	17	-	-	JF/PD	1998	1998*	Occupied
Puget Prairie 2	3	2	10-15	5-10	AP	1998	1998	Occupied
Puget Prairie 3	50	30	50-80	50-80	AP/DH	1998	1998	Occupied
Puget Prairie 4	0	0	-	-	AP/JF/BB	1994	1998	Extirpated
Puget Prairie 5	0	0	-	-	BB	1988	1998	Extirpated
Puget Prairie 6	0	0	-	-	BB	1985	1998	Extirpated
Puget Prairie 7	0	-	-	-	AP/DH	1992	1997	Extirpated
Puget Prairie 8	0	0	-	-	AP/DH	1988	1998*	Uncertain
South Cascades 1	0	3	-	5-10	AP/DR	1998	1998	Occupied
South Cascades 2	-	80 (2)	-	>100	AP/DR	1998	1998	Occupied
South Cascades 3	0	0	-	-	AP/DR	1984	1998*	Uncertain
South Cascades 4	1	4	-	5-10	AP	1998	1998	Occupied
South Cascades 5	-	3 (1)	-	20-30	AP/RL	1998	1998*	Occupied
South Cascades 6	-	5	-	20-30	AP/RL	1998	1998	Occupied
South Cascades 7	0	15-20	-	30-50	AP	1998	1998	Occupied
South Cascades 8	0	0	-	-	AP	1987	1998	Extirpated
South Cascades 9	0	-	-	-	AP/RL	1955	1997*	Uncertain
South Cascades 10	-	-	-	-	-	1977	1977	Uncertain

^a () = number collected

^b JF = John Fleckenstein, PD = Patrick Dunn, AP = Ann Potter, DH = David Hays, BB = Barry Bidwell, DR = Don Rolfs, RL = Rose Leach.

^c * = partial survey

HABITAT STATUS

Grasslands once were common across much of the lowland landscape from southern Vancouver Island south through western Washington and into the Willamette Valley of Oregon. The vast majority of this grassland habitat has been lost during the past 150 years due to development, fire suppression, and invasion by native and non-native plants. Prairies covered hundreds of thousands of acres of pre-settlement south Puget Sound (Crawford and Hall 1997). Today, less than 3% of that original landscape remains and much of it is degraded or bears competing human uses (Crawford and Hall 1997).

Within Puget Sound, prairie habitat has historically been maintained in part through periodic burning by Native Americans (Norton 1979). Active habitat management methods, including controlled burning and mowing are necessary to maintain these grassland sites today. However, vegetation management practices can be directly lethal to butterflies, and must be conducted under special prescriptions regarding scale and location in order to minimize this impact (Char

and Boersma 1995, Swengel 1996, Swengel 1998, Schultz 1998, Schultz and Crone 1998, Kwilosz and Knutson 1999) (see “Prairie Management”, page 11). Southern Cascade grasslands and Ponderosa pine savanna/woodland habitats have been reduced and degraded especially through fire suppression, development, and grazing.

Currently, no sites are managed specifically for mardon skippers. Dedicated funding for the management activities necessary to restore and maintain mardon skipper habitat does not exist for any site. Five of the eight Puget Sound sites (Puget Prairie 2, 3, 4, 5, and 6) are managed, at least in part, for native prairie vegetation (Washington Department of Natural Resources 1989a, 1989b; Washington Department of Fish and Wildlife 1995; Mima Prairie Advisory Committee 1991). The remaining Puget Prairie sites and all southern Cascade sites lack planning for grasslands or butterflies. Current and historic mardon skipper sites are under the jurisdiction of various federal, state, local, private, and tribal landowners (Table 3).

During 1997-98 surveys, recent, significant, habitat alterations were noted at four historic locales (D. Hays and A. Potter, personal observation). Broadcast spreading of cow manure, applied over a period of years, resulted in near elimination of native bunchgrass from the Puget Prairie 7 site. At Puget Prairie 8, bulldozing removed vegetation and leveled topography in the *Festuca* dominated portion of the site. Road work at South Cascades 8, and a portion of South Cascades 4, resulted in near complete loss of native *Festuca* bunchgrass from these locales.

Table 3. Land ownership and size of mardon skipper sites in Washington.

Site Name	Owner ^a	County	Area (ac)	Status
Puget Prairie 1	US Army	Pierce	247	Occupied
Puget Prairie 2	WDFW	Thurston	5-10	Occupied
Puget Prairie 3	WDFW	Thurston	20-30	Occupied
Puget Prairie 4	WDNR	Thurston	380	Extirpated
Puget Prairie 5	WDNR	Thurston	20	Extirpated
Puget Prairie 6	County	Thurston	600	Extirpated
Puget Prairie 7	Private	Thurston	180	Extirpated
Puget Prairie 8	Private	Thurston	300	Uncertain
South Cascades 1	Private	Klickitat	1-5	Occupied
South Cascades 2	Private	Klickitat	10-20	Occupied
South Cascades 3	USFWS	Klickitat	1-5	Uncertain
South Cascades 4	USFS	Yakima	1-5	Occupied
South Cascades 5	YIN	Yakima	5-10	Occupied
South Cascades 6	YIN	Yakima	1-5	Occupied
South Cascades 7	YIN	Yakima	5-10	Occupied
South Cascades 8	USFS	Yakima	½	Extirpated
South Cascades 9	YIN	Yakima	1-10	Uncertain
South Cascades 10	YIN	Yakima	100	Uncertain

^a Ownership: WDFW = Washington Dept of Fish and Wildlife, WDNR = Washington Dept of Natural Resources, USFWS = U.S. Fish and Wildlife Service, USFS = U.S. Forest Service, YIN = Yakama Indian Nation.

CONSERVATION STATUS

Legal Status

The mardon skipper is a State Candidate species, which provides no legal protection. This species has no protective federal designation. If the species is state listed, it would be unlawful to hunt, possess, maliciously harass, or kill mardon skippers, or to maliciously destroy their eggs (RCW 77.15.120, 77.15.130).

Management Activities

Puget prairie management and restoration.—Interest in managing and restoring native grasslands for the benefit of plant communities has grown in recent years. Specifically on Puget prairies, restoration techniques including mowing, hand pulling, herbicide application, and prescribed burning have been used to control invasive, native and non-native plants. While these practices require intensive effort, they appear to control some invasive species and to enhance the health of some native plant populations. Over the long-term, efforts to restore and maintain prairies are likely to benefit mardon skippers. Vegetation management practices, however, can significantly impact skippers in the short-term (see “Prairie Management”, page 11).

Surveys.—Puget prairie historic locales were surveyed intensively for mardon skippers and their habitat in recent years by TNC, DNR, and WDFW (Char and Boersma 1995, Fleckenstein and Potter 1999, Potter et al. 1999)(Table 3). Seven of eight southern Cascade historic locales were surveyed for mardon skippers and their habitat in 1997 and 1998 by WDFW (Table 3). In addition, potential new sites in both areas were searched for in 1997 and 1998, resulting in the discovery of two new sites (Puget Prairie 1 and 2) in 1997, and two new southern Cascade sites (South Cascades 5 and 7) in 1998. The Puget Trough has been well surveyed for potential additional sites, but undiscovered sites may remain in the southern Cascades.

Research.—WDFW and TNC are cooperating on a two-year project to collect information on the life histories and habitat requirements for four Puget prairie state candidate butterflies, including the mardon skipper. A preliminary report describing year one of the study, has been prepared (Potter et al. 1999); final report is anticipated for January 2000.

Database management.—The Evergreen Aurelians, a group of prominent northwest lepidopterists, has maintained a series of notebooks documenting the distribution of butterflies in Washington and Oregon (The Evergreen Aurelians 1996). The Washington records were shared with WDFW and are currently being entered into a database. Thirty-five entries pertain to mardon skippers. Prior to acquiring the Northwest Lepidopterist Database, the Department collected mardon skipper records and maintains those in the Heritage database. These databases are currently being merged and verified.

Records search.—In December 1998, WDFW requested mardon skipper specimen records from the following museums: American Museum of Natural History, New York; National Museum of Natural History, Smithsonian Institution, Washington, D.C.; Washington State University, Pullman; Burke Museum, University of Washington, Seattle; and Allyn Museum of Entomology, Sarasota, Florida. In July 1999, the Department requested mardon skipper specimen information from Oregon State University and University of Connecticut. Replies were received from all but the Burke and Allyn Museums; specimens were reported from only the Smithsonian National Museum of Natural History and Oregon Sate University. Appropriate records have been incorporated into butterfly and Heritage databases.

Collection permits.—Applications made to the Department of Fish and Wildlife for permits to collect butterflies are received by the Enforcement Program and reviewed by Wildlife Program staff. A scientific collection permit is required for collection for research or public display (RCW 77.32.010); no permit is required for collecting non-listed butterfly taxa for private collections (S. Dauma, personal communication, December 1998).

Priority Habitats and Species Program.—The Department's Priority Habitats and Species (PHS) program helps local governments, state and federal agencies, private landowners, consultants, and tribal biologists plan responsible land-use projects that accommodate the needs of fish and wildlife. PHS management recommendations for the mardon skipper were published in December 1995 (Appendix A).

FACTORS AFFECTING CONTINUED EXISTENCE

The mardon skipper is threatened directly and indirectly by a number of factors, and specific threats vary in degree of concern between sites in south Puget Sound and the southern Cascades. Pyle (1989) identifies the threats to this species as any factors that degrade its obligate grasslands, including: development, overgrazing, herbicides, introduced plants, and natural succession to forest. Because butterflies like the mardon skipper are sedentary and have a low degree of vagility, maintaining occupied habitat quality is perhaps the most important management concern (Erhlich 1992). Many of the threats discussed below work in concert at particular sites to negatively impact mardon skipper habitat (Table 4).

There are a number of potential threats to mardon skipper populations for which little information is available. Competition from introduced insects, diseases affecting larval host plants and butterflies, and predation by introduced wildlife have adversely affected other butterfly species, but no information on their potential impacts to the mardon skipper is available.

Table 4. Threats and potential extirpation factors at mardon skipper sites in Washington.

Site Name	Owner ^b	Threats/Extirpation Factors ^a									
		Veg	Dev	Fire	Dist	Coll	Herb	Graze	Agric	Insect	
Puget Prairie 1	US Army			X	X						
Puget Prairie 2	WDFW	X			X	X					
Puget Prairie 3	WDFW	X			X	X	X				
Puget Prairie 4	WDNR	X		X		X					
Puget Prairie 5	WDNR	X			X						
Puget Prairie 6	Thurston Co.	X									
Puget Prairie 7	Private	X			X	X		X	X		
Puget Prairie 8	Private	X	X		X			X	X		
South Cascades 1	Private	X	X	X	X				X		
South Cascades 2	Private	X			X	X		X			X
South Cascades 3	USFWS	X			X						
South Cascades 4	USFS	X		X				X			X
South Cascades 5	YIN	X	X		X						X
South Cascades 6	YIN	X	X								X
South Cascades 7	YIN	X	X								X
South Cascades 8	USFS	X	X			X	X				X
South Cascades 9	YIN	X	X		X						
South Cascades 10	YIN	X			X			X			

^a **Veg** = invasive non-native vegetation; **Dev** = development; **Fire** (self-explanatory); **Dist** = human disturbance; **Coll** = butterfly collecting; **Herb** = herbicide application; **Graze** = livestock grazing; **Agric** = agricultural practices; **Insect** = insecticide application. Natural succession, a threat presented in text, affects all sites.

^b Ownership: WDFW = Washington Dept of Fish and Wildlife, WDNR = Washington Dept of Natural Resources, USFWS = U.S. Fish and Wildlife Service, USFS = U.S. Forest Service, YIN = Yakama Indian Nation.

Invasive Non-native Plants

Invasion and dominance of native grasslands by exotic plants is a common issue that threatens grassland butterflies (Warren 1993, Schultz 1998), and has occurred rapidly at several current and historic mardon skipper sites (Potter et al. 1999). Introduced plants threaten the mardon skipper in several ways. In addition to directly competing with larval and adult food plants, many invasive shrubs, forbs, and grasses prevent or obscure access to nectar plants (Potter et al. 1999). Schultz (1998) observed that tall exotic grasses may negatively influence ovipositing by a western Oregon grassland butterfly, the Fender's blue (*Icaricia icarioides fenderi*). In general, the short structure of a fescue bunchgrass sites allows the adult butterfly to access its similarly short, native, nectar and oviposition plants. Invasive, non-native, sod-forming grasses, such as velvet-grass (*Holcus lanatus*) and tall oatgrass (*Arrhenatherum elatius*), and weedy forbs, including cat's ear (*Hypochaeris radicata*) directly compete with the native bunchgrass which mardon skippers depends on for egg depositing, larval food, and hibernaculum structures (Hays and Johnson 1998; McCorkle et al. 1980). Introduced plants are a critical issue at south Puget

Sound sites, however, the problem is increasing in the southern Cascades, and most sites are vulnerable given their highly accessible nature.

On Puget Sound sites, the invasive shrub Scot's broom, poses a particular threat to prairies through its ability to form dense stands which exclude native grassland species. Parker et. al. (1997) found that dense cover of Scot's broom excluded *Festuca idahoensis* and other native species. Further, due to its highly flammable nature, areas of Scot's broom increase the vulnerability of native plants and butterflies to high intensity fire. High intensity fires can cause significantly greater butterfly mortality than low intensity fires (Dana 1991). Intensive management appears to be controlling Scot's broom at two extant Puget prairie sites, but must be continued for the foreseeable future. Unfortunately, Scot's broom control methods, either hand pulling, tractor mowing, or burning, also likely destroy, through trampling or heat, some mardon skipper eggs, larvae, and or pupae, which are immobile and on ground level vegetation (Erhardt 1985, Dana 1991).

The small meadow sites characteristic of some Cascade locales, are vulnerable to native species removal when roads are routed through them and reseeding with non-native grasses occurs. Currently, this threat applies to several southern Cascade sites. At least one southern Cascades historic locale (South Cascades 8), and a large portion of a remaining site (South Cascades 4), have been destroyed by this practice.

Natural Succession

Fire from lightning strikes and Native American burning was a common pre-settlement occurrence on grasslands sites in the south Puget Sound (Norton 1979). The fires limited both shrub and tree component of grasslands and savanna to a few fire resistant (or dependent) species, including Ponderosa pine, lodgepole pine (*Pinus contorta*), and Oregon white oak (*Quercus garryana*). In the absence of this process, native shrubs and trees including Douglas fir (*Pseudotsuga menziesii*), have encroached upon the grasslands and converted much of it to forest (Crawford and Hall 1997). Without management to maintain grasslands, encroachment will continue to be a threat to mardon skipper habitat.

Prairie Management

Recent efforts to maintain and restore native prairies in south Puget Sound have met with some initial success, however, restoration goals and methods have regularly focused on general weed control across grasslands rather than specific needs of rare wildlife species. Erhlich (1992) suggests that the detailed quality of a butterfly's habitat is much more important than its extent. Management and restoration of habitat for mardon skippers will likely require small-scale, site specific treatments focused on augmenting food and nectar plants. These types of projects are infrequently conducted for rare butterflies due to their cost and long-term nature (Schultz 1997). Funding for prairie management efforts is well below levels that are needed to ensure restoration efforts will succeed.

Unfortunately, methods used to maintain and restore plant communities can negatively affect mardon skippers. Mowing likely kills sessile larvae or pupae, and people hand-pulling invasive plants may trample eggs, larvae, or pupae (Erhardt 1985). Fire may pose a particular danger to mardon skipper larvae (Dana 1991, Schultz and Crone 1998) and may be a less favorable management technique in general for management of occupied butterfly habitat (Swengel 1998). Grazing has been recommended for maintaining butterfly habitat where tall introduced grasses are a problem (Warren 1993), however, as non-selective grass browsers, cattle have the potential for adverse impacts to native as well as introduced grasses (Pickering 1997). Although prairies and mardon skippers evolved with fire, fuel loads (e.g., Scot's broom) are significantly greater now than they were historically, resulting in more intense and larger fires that can kill skipper eggs, larvae, pupae, or adults (Dana 1991). Mardon skippers often occupy discrete patches within a grassland site (Potter et al. 1999). The sites are also at a considerable distance from one another, likely well beyond dispersal distance. Recolonization is unlikely if populations were to be eliminated by management practices. The long-term persistence of mardon skippers at any site, depends, in part, upon the site being large enough to accommodate necessary habitat management practices.

Development

Building human structures results in direct habitat loss and degradation, and road systems create pathways for introduction of invasive plant species. Roads, trails, and buildings have destroyed habitat at several Puget Prairie sites (Puget Prairie 1, 2, 3, and 4). Helicopter landing pads have removed habitat at two Cascade sites (South Cascades 6 and 7). In addition, a lookout tower, roads, trails, and buildings are present at one of these Cascade sites. Buildings at another Cascade site have significantly reduced available habitat (South Cascades 1), and roads, trails, and camping areas have destroyed habitat at a fourth site (South Cascades 9).

Human Disturbance

Recreational activities, including walking, horseback riding, and off-road vehicle driving, likely directly kill some mardon skipper eggs, caterpillars, pupae or adults, which are located on ground level vegetation. These activities also degrade habitat by damaging native plants and exposing soil for invasion by weeds. Two currently occupied Puget Prairie sites (Puget Prairie 2 and 3) are particularly threatened by heavy recreational use. Three southern Cascades sites are also threatened by these activities (South Cascades 1, 5 and 9)

The Puget Prairie 1 site is located on the outskirts of the designated Artillery Impact Area on Fort Lewis. Alterations from the current patterns of shelling, tracked vehicle training, or planned firing ranges could potentially destroy the population.

Insecticides and Herbicides

Insecticide applications threaten mardon skipper populations. Btk (*Bacillus thuringiensis* var.

kurstaki) a lepidoptera specific insecticide, has become the pesticide of choice to treat defoliators (Wagner and Miller 1995). Btk has recently been applied in large-scale, aerial applications to control Asian gypsy moths (*Lymantria dispar*) around Puget Sound, and spruce budworm (*Choristoneura occidentalis*) in the Washington and Oregon Cascades. In addition, large-scale, aerial applications of this insecticide have recently been proposed in the Washington and Oregon Cascades to control the Douglas-fir tussock moth (*Orgyia pseudotsugata*) (Wenatchee National Forest 1999). Btk is a bacterium, which when ingested, is lethal to butterfly and moth larvae. Recently, the Forest Service conducted laboratory tests to determine native butterflies and moths susceptibility to Btk. The results revealed a complicated, highly variable pattern of toxicity, with some species not affected, and others highly sensitive (Wagner and Miller 1995). Further, susceptibility varies within a species depending upon the caterpillar instar developmental stage. Wagner and Miller (1995) state that single brooded, spring-active species, with caterpillars that feed during the application period for the target species (such as the mardon skipper), are especially vulnerable. Although, grasslands are not a target application habitat, due to visibility and drift they are difficult to avoid with aerial applications, especially small meadow or savanna/woodland sites. Most of the South Cascade mardon skipper sites are within areas which have either recently been treated or are proposed for Btk applications by federal, state, tribal, and private land managers (L. Rolph, K. Ripley, J. Feen, R. Pyle, J. Eskow, T. LaMarr, personal communications). Special precautions to identify and avoid mardon skipper sites and habitat must be undertaken in order to reduce this threat.

Commonly used herbicides could harm larval or adult food sources. Weed control and grassland management practices often utilize large-scale herbicide applications, potentially killing plants necessary for the mardon skipper as well as target weeds.

Livestock Grazing

Grazing by livestock has been recommended by some for management of butterfly habitat (Warren 1993) where tall introduced grasses cover native butterfly food and nectar plants. Areas with tall introduced grasses are avoided by mardon skippers (Potter et al. 1999). However, livestock grazing may also cause adverse impacts to butterfly populations by trampling eggs, larvae, pupae, and adults (Warren 1993); destruction of larval and adult food sources from consumption and trampling; and soil disturbance that allows invasion by weeds (Warren 1993). Grazing has been implicated in the decline of two grass skippers in Minnesota (Dana 1991), and has been associated with increasing rates of extinction in the Glanville fritillary, *Melitaea cinxia* in Finland (Hanski et al. 1995). The native fescue bunchgrasses (Idaho, and likely red fescue), which mardon skippers depend upon, regenerate by seed, which are likely consumed during grazing. As the native grass food plants of the mardon skipper are favored forage for cattle, grazing effects are not likely to be specific, or beneficial to mardon skippers, unless timing, size, and intensity of grazing can be controlled to selectively manage mardon skipper habitat. Grazing occurs on occupied mardon skipper habitat in the southern Cascades, and has had a significant negative impact at the South Cascades 4 site, but no longer occurs on sites occupied by mardon skippers in south Puget Sound.

Agricultural Practices

A number of agricultural practices may affect habitat suitability for mardon skippers. Plowing often destroys native plants and encourages invasion by incompatible plant species. Broadcast applications of manure or fertilizer are harmful to native bunchgrass species and have significantly degraded the Puget Prairie 7 site. Applying insecticides or herbicides can impact skippers or their habitat as described above.

Fire

Small, isolated populations of sedentary insects, such as the mardon skipper, are likely vulnerable to fire (Dana 1991 Schultz and Crone 1998, Warren et al. 1987). Historically, grassland habitats for the mardon skipper were maintained in part, by recurring fires. However, current site fuel loads, including invasive trees and shrubs, combined with reduction and fragmentation of mardon skipper populations, and reduction in size of native grasslands, makes natural or prescribed burning a potential threat to the mardon skipper. Management approaches have been developed and are currently being tested to utilize fire for maintenance and restoration of grasslands, while minimizing impacts to butterfly populations (Pickering 1997, Schultz and Crone 1998).

Collecting

Insect collecting is a valuable component of research, including systematic work, and is often necessary for documenting the existence of populations. Collecting is also a potential threat to rare species. Butterfly populations that are small and easily accessible (such as most mardon skipper populations) are especially vulnerable to over-collection.

Population Dynamics and Structure

Many butterfly populations exhibit metapopulation structure, where fluctuations in occupancy of patches of habitat are directly related to the size of patches, the interrelation of patches, dispersal patterns, and dispersal distances of the butterfly (Hanski et al. 1995, Harrison and Quinn 1989, Thomas and Harrison 1992). In some instances, small populations are dependent upon dispersal of butterflies from larger source populations for re-colonization after extirpations (Thomas and Harrison 1992). Remaining mardon skipper sites, are small in size, and likely isolated from one another. Sites from which mardon skippers are extirpated are unlikely to be recolonized due to the fragmented nature of remaining suitable habitat. In the absence of a functional metapopulation, conservation of mardon skippers may rely on movement of individuals to re-populate areas and maintain sites into the future.

Many, if not most insect populations normally experience large fluctuations in size (Ehrlich 1992, Schultz 1998). Weather, predation, and disease may cause annual changes in butterfly numbers of an order of magnitude or more. Normal population fluctuations, coupled with habitat

alteration or loss (sometimes seemingly minor habitat alterations) can result in population extirpations (Hanski et al. 1995). The small size of remaining mardon skipper populations increases their vulnerability to extirpation due to natural fluctuations.

Adequacy of Existing Regulatory Mechanisms

The mardon skipper currently receives no legal protection.

OTHER SPECIES OF CONCERN

Prairies in the Puget Trough host additional species of concern that should be considered when managing mardon skippers. Other butterflies include Whulge checkerspot (*Euphydryas editha taylori*), Puget blue (*Plebejus icarioides blackmorei*), and valley silverspot (*Speyeria zerene bremnerii*), all of which are candidates for state listing. State candidate bird species inhabiting these prairies include streaked horned lark (*Ermophila alpestris strigata*) and Oregon vesper sparrow (*Pooecetes gramineus affinis*). Another state candidate, the western pocket gopher (*Thomomys mazama*), which encompasses various subspecies, is also found in Puget Trough grasslands.

Plant species of concern found at Puget Prairie sites include the state endangered (federally threatened) golden paintbrush (*Castilleja levisecta*) and the state sensitive white-top aster (*Aster curtus*). A state sensitive plant at Southern Cascades sites is long-bearded sego lily (*Calochortus longebarbatus* var. *longebarbatus*). Mardon skipper adults have been observed nectaring on a *Calochortus* lily at one Southern Cascades site (A. Potter, personal observation).

CONCLUSION AND RECOMMENDATION

The mardon skipper is currently found at only four, small, geographically disjunct areas in Washington, Oregon, and California. In Washington, nine of 18 historic sites are known to be occupied. Based on several years of repeated survey effort, it has been concluded that populations at five historic sites have been extirpated. Four of these are in south Puget Sound and one is in the southern Cascades. The current status of four other sites is uncertain. Grasslands of the Puget prairies and Washington's southern Cascades are believed to support just a few hundred individuals.

During the past 150 years, native grasslands have been developed, fragmented, and degraded. Fire historically played an important role in maintaining grassland plant communities. More than 95% of the original prairie grasslands are gone from western Washington. Mardon skippers were likely more widespread and abundant prior to large-scale loss of their open, fescue dominated, grassland habitat.

The grassland and savanna landscapes upon which mardon skippers depend are threatened today by forest encroachment, invasion by native and non-native plants, development, recreational activities, grazing, agricultural practices, and application of herbicides. The butterflies are threatened by insecticides, control practices for invasive plants, military training, fire, and recreational activities.

The extant Washington mardon skipper population consists of a few hundred individuals present at only nine geographically isolated sites, three in Puget Sound and six in the southern Cascades. Many of these sites are under assault from invasive non-native plants, and have human uses which are incompatible with butterfly management. At none of the mardon skipper sites does a mandate and dedicated funding occur for managing the site for mardon skipper habitat.

Due to the mardon skipper's small population size, limited distribution, isolation, and the numerous factors threatening the species and its remaining habitat, the Department believes the species is vulnerable to extirpation and the Puget Sound population in particular, is seriously threatened with extinction. The Department, therefore, recommends the mardon skipper be classified as a State Endangered species.

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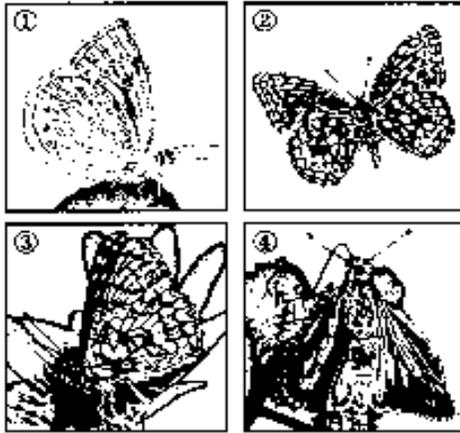
Appendix A

PHS Management Recommendations

excerpts from:

Larsen, E.M., E Rodrick, and R. Milner, eds. 1995. Management recommendations for Washington's priority species, Volume 1: Invertebrates. Wash. Dept. Fish and Wildl., Olympia. 82pp.

Management Recommendations for Washington's Priority Species



- ① **Puget Blue**
Plebejus icarioides blackmorei
- ② **Valley Silverspot**
Speyena zereba bremnerii
- ③ **Whulge Checkerspot**
Euphydryas editha taylori
- ④ **Mardon Skipper**
Polites mardon

GENERAL RANGE AND WASHINGTON DISTRIBUTION

Puget Blue

The Washington distribution is considered this subspecies' general range. Small concentrations occur in the Tenino Prairies of western Washington.

Valley Silverspot

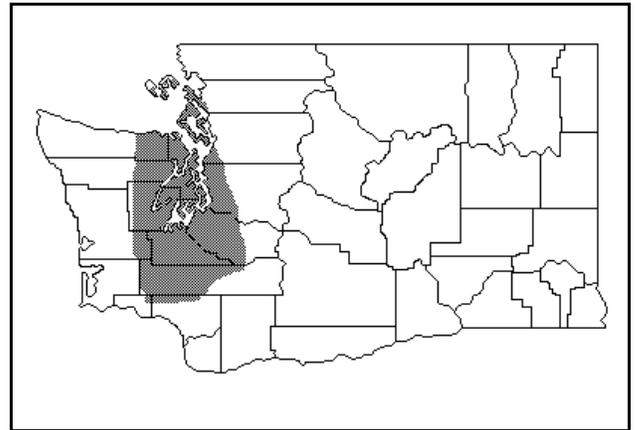
The Washington distribution includes declining concentrations in the San Juan Islands, Puget Trough, northeastern Olympics, Willapa Hills, and western Cascades. Formerly, this subspecies' overall range extended to the Willamette Valley in Oregon where it now appears to be extinct.

Whulge Checkerspot

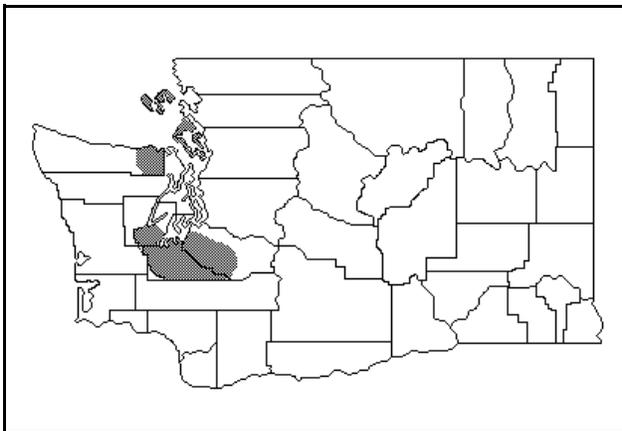
The Washington distribution includes concentrations which occur in the Puget Trough, Straits of Juan de Fuca, and San Juan Islands. This subspecies' overall range extends to Oregon's Willamette Valley where whulge checkerspots are virtually extirpated.



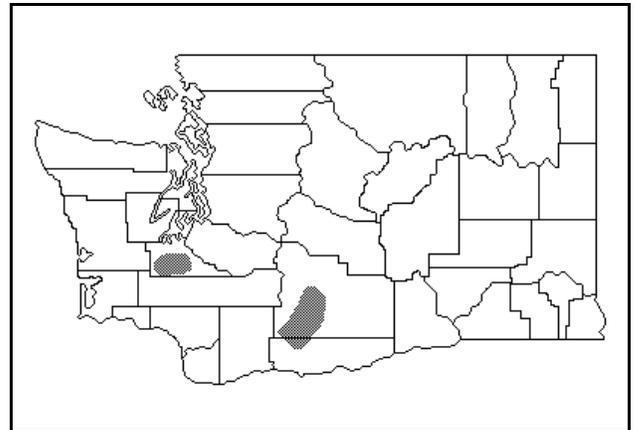
Areas in Washington where the Puget blue butterfly, *Plebejus icarioides blackmorei*, occurs in suitable habitat. Map derived from WDFW data files



Areas in Washington where the valley silverspot butterfly, *Speyeria zerene bremnerii*, occurs in suitable habitat. Map derived from WDFW data files.



Areas in Washington where the whulge checkerspot butterfly, *Euphydryas editha taylori*, occurs in suitable habitat. Map derived from WDFW data files.



Areas in Washington where the mardon skipper butterfly, *Polites mardon*, occurs in suitable habitat. Map derived from WDFW data files.

Mardon Skipper

This species occurs in western Washington, southwestern Oregon, and northwestern California. The Washington distribution includes small concentrations which occur in the Tenino Prairies and south-central Cascades (Thurston, Yakima, and Klickitat counties).

STATUS

The Puget blue, valley silverspot, whulge checkerspot, and mardon skipper butterflies are State Candidate species.

RATIONALE

The Washington distributions of these four butterflies are very restricted. Puget blue butterflies are found in only 12 Washington locations and valley silverspots in 6. While locally bountiful, whulge checkerspot concentrations are declining. Mardon skippers are noted in less than 10 Washington locations. All four butterflies are considered vulnerable to a variety of threats.

HABITAT REQUIREMENTS

Puget Blue

Puget blue butterflies are colonial and not usually rare where they occur. Their habitat in Washington includes forest clearings with a presence of lupine (*Lupinus spp.*), Puget lowland prairies and their forest edges, powerline cuts, and unsprayed railroad rights-of-way. Known host plants for this Washington endemic include broadleaf lupine (*Lupinus latifolius*) and probably other lupine species.

Valley Silverspot

This highly localized and often abundant butterfly uses open prairies, arctic-alpine tundra, sub-alpine glades, and mid-elevation roadsides and clearings. The only known host plant is the western blue violet, *Viola adunca*.

Whulge Checkerspot

This locally prolific Pacific Northwest subspecies is associated with maritime prairies and shorelines along the Strait of Juan De Fuca, the post-glacial gravelly outwash and mounded prairies of the Puget Trough, and open island prairies with a dominance of original vegetation. Host plants include the native seaside plantain (*Plantago maritima macrocarpa*) and the non-native English plantain (*P. major lanceolata*).

Mardon Skipper

The mardon skipper is endemic to the Pacific Northwest. It primarily inhabits open grasslands on glacial outwash prairies, as well as openings and ridgetops within ponderosa pine (*Pinus ponderosa*) woodlands. Idaho fescue (*Festuca idahoensis*) is the suspected host plant.

LIMITING FACTORS

General

Many localized populations of butterflies have been lost and a great many more are in jeopardy. The most common causes of butterfly habitat loss and human-caused mortality are development, logging, grazing, impoundments, and the use of herbicides. Chemical or biological (e.g. *Bacillus thuringiensis*) insecticide use, including those applications targeting spruce budworm and gypsy moth, as well as drift from agricultural pesticides applications, undoubtedly affect non-target insect populations. Aerial use of herbicides in forestry, and roadside spraying for weeds eliminates many butterfly hostplants. Efforts to moderate the impact of these activities on natural habitats will benefit the diversity and abundance of our entire butterfly fauna.

Collecting has not been demonstrated to seriously impact butterfly populations in Washington. Conservationists do not usually consider butterfly populations to be susceptible to overcollecting due to the extraordinary reproductive capacity of these insects. Allegations of overcollecting have been made however, for some areas, and ecologically stressed, very local populations could conceivably be damaged in this way. Collecting should certainly be limited for the rarer butterflies (mardon skipper, valley silverspot, whulge checkerspot) of the easily accessible Tenino Prairies, and on the whole, collectors should practice restraint. Collecting remains essential to document occurrence and build research collections.

With care and appropriate application of funding and expertise, almost every subspecies and major population should be able to be maintained in reasonable numbers. Special efforts will have to be made, however, to preserve butterfly diversity in the most rapidly expanding urban and suburban zones.

Specific

Puget Blue--Land development, intensive fertilizing and grazing, agriculture, forest succession, and railroad right-of-way spraying threaten Puget blue butterflies.

Valley Silverspot--Development activities within habitats, grazing, fertilization and other agricultural practices, logging and associated reduction of floristic diversity, succession of prairies, and aerially applied herbicides within forestlands threaten valley silverspot butterflies.

Whulge Checkerspot--Development activities within habitats, grazing, fertilization and other agricultural practices, disturbance, and host plant community succession threaten this subspecies' perpetuation.

Mardon Skipper--Factors that degrade mardon skipper obligate grasslands limit this species. In addition, development, overgrazing and fertilization, herbicide application, the introduction of plants such as Scots broom, and natural succession within forest communities threaten mardon skipper butterflies.

MANAGEMENT RECOMMENDATIONS

General

The use of insecticides or herbicides may negatively affect this species. If insecticide or herbicide use is planned for areas where this species occurs, review Appendix A (page A-1) which lists contacts that may be helpful when assessing pesticides and their alternatives.

Discontinue the use of fertilizers and limit grazing on habitats where these species still exist. The enlargement of Rocky Prairie Preserve and the long-term status of Rock Prairie Registry site are key to all four species.

Specific

Puget Blue--Maintain lupine stands and control succession by cutting and/or burning. Adults can and will disperse to nearby patches of lupine, as along Rocky Prairie railroad line. Therefore, the direct planting of lupines could be an effective measure. Spraying of the railroad at Rocky Prairie should be discontinued.

The Puget blue is restricted to a very limited number of lowland habitats under pressure from human expansion. Fortunately the best colony occurs on a Nature Conservancy Preserve, but additional habitat should be set aside and measures enhanced for survey and management.

Valley Silverspot--Forest practices within the Willapa Hills that diminish the use of chemicals would help to maintain this population. Control of plant community succession will be necessary on Tenino prairies.

The Olympic Mountains, Willapa Hills, and Puget Trough populations should be monitored separately and each protected individually. The San Juan population should be vigorously sought and protected if it still exists.

Whulge Checkerspot--Maintain grazing level at Rock Prairie. Light grazing may be necessary on other preserves.

Along with the valley silverspot and the mardon skipper, this is one of the most nearly autochthonous butterflies in Washington. All three fly in good numbers at Rock Prairie, near Tenino, making this one of the most significant butterfly sites in the state. Light grazing therefore will likely need to be a component of its management, at least on the Rock Prairie site. The San Juan Island colonies, where native plantains are used, may not have this need. The sparse Dungeness populations are distinct in size and pattern from Puget Trough checkers. Each component should be conserved individually.

Mardon Skipper--Maintain stands of Idaho fescue and promote western blue violet (*Viola adunca*) as a nectar source. Incremental fire and mowing management techniques should be researched, as should further life history requisites of this species.

This butterfly was formerly considered to be Washington's only endemic butterfly species. The Washington distribution, disjunct between the Tenino Prairies and the southern Cascades, is puzzling. No records have been found between the two, but additional colonies should still be sought in intervening grasslands. This species is of great scientific and evolutionary interest.

RESEARCH NEEDS

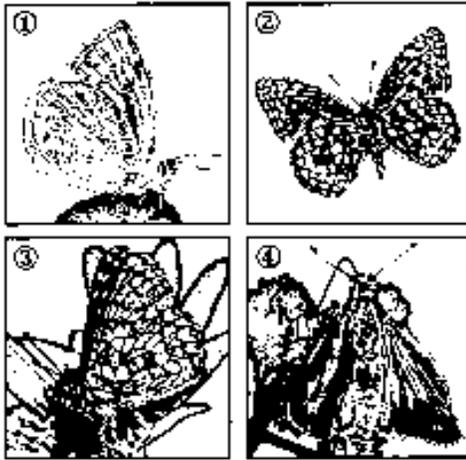
Additional studies are necessary for a number of taxa and habitats. Some of the most important investigations include:

- A survey of the San Juan Islands in an attempt to detect several species that have not been recorded there in recent years.
- A full survey of western Washington grasslands and heath/shrublands with respect to the distribution, habitat, and management requirements of a guild of uncommon skipper butterflies.
- Surveys of existing nature reserves should be conducted in order to better document the representation of uncommon butterflies on existing protected lands.

SOURCE. Information for this management recommendations document was derived from:

Pyle, R. M. 1989. Washington butterfly conservation status report and plan. Wash. Dept. of Wildl., Nongame Prog., Olympia. 217pp.

Management Recommendations for Washington's Priority Species



- ① **Puget Blue**
Plebejus icarioides blackmorei
- ② **Valley Silverspot**
Speyeria zerene bremnerii
- ③ **Whulge Checkerspot**
Euphydryas editha taylori
- ④ **Mardon Skipper**
Polites mardon

Key Points

Habitat Requirements

Puget Blue

- This butterfly uses forest clearings with lupine (*Lupinus spp.*), Puget lowland prairies and their forest edges, powerline cuts, and unsprayed railroad rights of way.
- Known host plants include broadleaf lupine (*Lupinus latifolius*).

Valley Silverspot

- This butterfly uses open prairies, arctic-alpine tundra, subalpine glades, and mid-elevation roadsides and clearings.
- The western blue violet, (*Viola adunca*) is the only known host plant.

Whulge Checkerspot

- Habitats include maritime prairies, shorelines along the Strait of Juan de Fuca, and Puget Trough prairies that possess a dominance of original vegetation.
- Host plants include native seaside plantain (*Plantago maritima macrocarpa*), and non-native English plantain (*P. major lanceolata*).

Mardon Skipper

- This skipper inhabits open grasslands on glacial outwash prairies, as well as openings and ridgetops within ponderosa pine (*Pinus ponderosa*) woodlands.
- Idaho fescue (*Festuca idahoensis*) is a suspected host plant.

Management Recommendations

- If insecticide or herbicide use is planned for areas where this species occurs, refer to Appendix A (page A-1) for contacts helpful when evaluating pesticides and their alternatives.
- Discontinue the use of fertilizers and limit grazing on habitats where these species occur.
- The expansion of the area within Rocky Prairie Preserve and the long-term status of the Rocky Prairie Registry site are key to all four species.

Puget Blue

- Maintain lupine stands and control succession by cutting and/or burning.
- Planting native lupines may be beneficial.
- Discontinue spraying the railroad right-of way at Rocky Prairie.

Valley Silverspot

- Reduce the use of chemicals during forest practices within the Willapa Hills.
- Maintaining early plant community succession will be necessary on the Tenino prairies.

- Monitor Olympic Mountains, Willapa Hills, and Puget Trough populations individually. The San Juan population should be vigorously sought and protected, if it still exists.

Whulge Checkerspot

- Maintain current grazing level at Rocky Prairie. Light grazing may be necessary on other preserves.

Mardon Skipper

- Maintain stands of Idaho fescue and promote *Viola adunca* as a nectar source.
- Incremental fire and mowing management techniques should be researched, as should further life history requisites of this species.

WAC 232-12-011 Wildlife classified as protected shall not be hunted or fished.

Protected wildlife are designated into three subcategories: Threatened, sensitive, and other.

(1) Threatened species are any wildlife species native to the state of Washington that are likely to become endangered within the foreseeable future throughout a significant portion of their range within the state without cooperative management or removal of threats. Protected wildlife designated as threatened include:

Common Name	Scientific Name
western gray squirrel	<i>Sciurus griseus</i>
Steller (northern) sea lion	<i>Eumetopias jubatus</i>
North American lynx	<i>Lynx canadensis</i>
Aleutian Canada goose	<i>Branta Canadensis leucopareia</i>
bald eagle	<i>Haliaeetus leucocephalus</i>
ferruginous hawk	<i>Buteo regalis</i>
marbled murrelet	<i>Brachyramphus marmoratus</i>
green sea turtle	<i>Chelonia mydas</i>
loggerhead sea turtle	<i>Caretta caretta</i>
sage grouse	<i>Centrocercus urophasianus</i>
sharp-tailed grouse	<i>Phasianus columbianus</i>

(2) Sensitive species are any wildlife species native to the state of Washington that are vulnerable or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats. Protected wildlife designated as sensitive include:

Common Name	Scientific Name
Gray whale	<i>Eschrichtius gibbosus</i>
Larch Mountain salamander	<i>Plethodon larselli</i>
Pygmy whitefish	<i>Prosopium coulteri</i>
Margined sculpin	<i>Cottus marginatus</i>

(3) Other protected wildlife include:

Common Name	Scientific Name
cony or pika	<i>Ochotona princeps</i>
least chipmunk	<i>Tamias minimus</i>
yellow-pine chipmunk	<i>Tamias amoenus</i>

Townsend's chipmunk	<i>Tamius townsendii</i>
red-tailed chipmunk	<i>Tamius ruficaudus</i>
hoary marmot	<i>Marmota caligata</i>
Olympic marmot	<i>Marmota olympus</i>
Cascade golden-mantled ground squirrel	<i>Spermophilus saturatus</i>
golden-mantled ground squirrel	<i>Spermophilus lateralis</i>
Washington ground squirrel	<i>Spermophilus washingtoni</i>
red squirrel	<i>Tamiasciurus hudsonicus</i>
Douglas squirrel	<i>Tamiasciurus douglasii</i>
northern flying squirrel	<i>Glaucomys sabrinus</i>
wolverine	<i>Gulo gulo</i>
painted turtle	<i>Chrysemys picta</i>
California mountain kingsnake	<i>Lampropeltis zonata</i> ;

All birds not classified as game birds, predatory birds or endangered species, or designated as threatened species or sensitive species; all bats, except when found in or immediately adjacent to a dwelling or other occupied building; all wildlife within Titlow Beach Marine Preserve Area and the conservation areas defined in chapter 220-16 WAC; mammals of the order *Cetacea*, including whales, porpoises, and mammals of the order *Pinnipedia* not otherwise classified as endangered species, or designated as threatened species or sensitive species. This section shall not apply to hair seals and sea lions which are threatening to damage or are damaging commercial fishing gear being utilized in a lawful manner or when said mammals are damaging or threatening to damage commercial fish being lawfully taken with commercial gear.

[Statutory Authority: RCW 77.12.020. 98-23-013 (Order 98-232), § 232-12-011, filed 11/6/98, effective 12/7/98. Statutory Authority: RCW 77.12.040. 98-10-021 (Order 98-71), § 232-12-011, filed 4/22/98, effective 5/23/98. Statutory Authority: RCW 77.12.040 and 75.08.080. 98-06-031, § 232-12-011, filed 2/26/98, effective 5/1/98. Statutory Authority: RCW 77.12.020. 97-18-019 (Order 97-167), § 232-12-011, filed 8/25/97, effective 9/25/97. Statutory Authority: RCW 77.12.040, 77.12.020, 77.12.030 and 77.32.220. 97-12-048, § 232-12-011, filed 6/2/97, effective 7/3/97. Statutory Authority: RCW 77.12.020. 93-21-027 (Order 615), § 232-12-011, filed 10/14/93, effective 11/14/93; 90-11-065 (Order 441), § 232-12-011, filed 5/15/90, effective 6/15/90. Statutory Authority: RCW 77.12.040. 89-11-061 (Order 392), § 232-12-011, filed 5/18/89; 82-19-026 (Order 192), § 232-12-011, filed 9/9/82; 81-22-002 (Order 174), § 232-12-011, filed 10/22/81; 81-12-029 (Order 165), § 232-12-011, filed 6/1/81.]

WAC 232-12-014 Wildlife classified as endangered species. Endangered species include:

Common Name	Scientific Name
pygmy rabbit	<i>Brachylagus idahoensis</i>
fisher	<i>Martes pennanti</i>
gray wolf	<i>Canis lupus</i>
grizzly bear	<i>Ursus arctos</i>

sea otter	<i>Enhydra lutris</i>
sei whale	<i>Balaenoptera borealis</i>
fin whale	<i>Balaenoptera physalus</i>
blue whale	<i>Balaenoptera musculus</i>
humpback whale	<i>Megaptera novaeangliae</i>
black right whale	<i>Balaena glacialis</i>
sperm whale	<i>Physeter macrocephalus</i>
Columbian white-tailed deer	<i>Odocoileus virginianus leucurus</i>
woodland caribou	<i>Rangifer tarandus caribou</i>
American white pelican	<i>Pelecanus erythrorhynchos</i>
brown pelican	<i>Pelecanus occidentalis</i>
peregrine falcon	<i>Falco peregrinus</i>
sandhill crane	<i>Grus canadensis</i>
snowy plover	<i>charadrius alexandrinus</i>
upland sandpiper	<i>Bartramia longicauda</i>
spotted owl	<i>Strix occidentalis</i>
western pond turtle	<i>Clemmys marmorata</i>
leatherback sea turtle	<i>Dermochelys coriacea</i>
Oregon silverspot butterfly	<i>Speyeria zerene hippolyta</i>
Oregon spotted frog	<i>Rana pretiosa</i>

[Statutory Authority: RCW 77.12.020. 98-23-013 (Order 98-232), § 232-12-014, filed 11/6/98, effective 12/7/98; 97-18-019 (Order 97-167), § 232-12-014, filed 8/25/97, effective 9/25/97; 93-21-026 (Order 616), § 232-12-014, filed 10/14/93, effective 11/14/93. Statutory Authority: RCW 77.12.020(6). 88-05-032 (Order 305), § 232-12-014, filed 2/12/88. Statutory Authority: RCW 77.12.040. 82-19-026 (Order 192), § 232-12-014, filed 9/9/82; 81-22-002 (Order 174), § 232-12-014, filed 10/22/81; 81-12-029 (Order 165), § 232-12-014, filed 6/1/81.]

WAC 232-12-297 Endangered, threatened, and sensitive wildlife species classification.

Purpose

- 1.1 The purpose of this rule is to identify and classify native wildlife species that have need of protection and/or management to ensure their survival as free-ranging populations in Washington and to define the process by which listing, management, recovery, and delisting of a species can be achieved. These rules are established to ensure that consistent procedures and criteria are followed when classifying wildlife as endangered, or the protected wildlife subcategories threatened or sensitive.

Definitions

For purposes of this rule, the following definitions apply:

- 2.1 "Classify" and all derivatives means to list or delist wildlife species to or from endangered, or to or from the protected wildlife subcategories threatened or sensitive.
- 2.2 "List" and all derivatives means to change the classification status of a wildlife species to endangered, threatened, or sensitive.
- 2.3 "Delist" and its derivatives means to change the classification of endangered, threatened, or sensitive species to a classification other than endangered, threatened, or sensitive.
- 2.4 "Endangered" means any wildlife species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state.
- 2.5 "Threatened" means any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats.
- 2.6 "Sensitive" means any wildlife species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened in a significant portion of its range within the state without cooperative management or removal of threats.
- 2.7 "Species" means any group of animals classified as a species or subspecies as commonly accepted by the scientific community.
- 2.8 "Native" means any wildlife species naturally occurring in Washington for purposes of breeding, resting, or foraging, excluding introduced species not found historically in this state.
- 2.9 "Significant portion of its range" means that portion of a species' range likely to be essential to the long term survival of the population in Washington.

Listing criteria

- 3.1 The commission shall list a wildlife species as endangered, threatened, or sensitive solely on the basis of the biological status of the species being considered, based on the preponderance of scientific data available, except as noted in section 3.4.
- 3.2 If a species is listed as endangered or threatened under the federal Endangered Species Act, the agency will recommend to the commission that it be listed as endangered or threatened as specified in section 9.1. If listed, the agency will proceed with development of a recovery plan pursuant to section 11.1.
- 3.3 Species may be listed as endangered, threatened, or sensitive only when populations are in danger of failing, declining, or are vulnerable, due to factors including but not restricted to limited numbers, disease, predation, exploitation, or habitat loss or change, pursuant to section 7.1.
- 3.4 Where a species of the class Insecta, based on substantial evidence, is determined to present an unreasonable risk to public health, the commission may make the determination that the species need not be listed as endangered, threatened, or sensitive.

Delisting criteria

- 4.1 The commission shall delist a wildlife species from endangered, threatened, or sensitive solely on the basis of the biological status of the species being considered, based on the preponderance of scientific data available.
- 4.2 A species may be delisted from endangered, threatened, or sensitive only when populations are no longer in danger of failing, declining, are no longer vulnerable, pursuant to section 3.3, or meet recovery plan goals, and when it no longer meets the definitions in sections 2.4, 2.5, or 2.6.

Initiation of listing process

- 5.1 Any one of the following events may initiate the listing process.
 - 5.1.1 The agency determines that a species population may be in danger of failing, declining, or vulnerable, pursuant to section 3.3.
 - 5.1.2 A petition is received at the agency from an interested person. The petition should be addressed to the director. It should set forth specific evidence and scientific data which shows that the species may be failing, declining, or vulnerable, pursuant to section 3.3. Within 60 days, the agency shall either deny the petition, stating the reasons, or initiate the classification process.
 - 5.1.3 An emergency, as defined by the Administrative Procedure Act, chapter 34.05 RCW. The listing of any species previously classified under emergency rule shall be governed by the provisions of this section.
 - 5.1.4 The commission requests the agency review a species of concern.
- 5.2 Upon initiation of the listing process the agency shall publish a public notice in the Washington Register, and notify those parties who have expressed their interest to the department, announcing the initiation of the classification process and calling for scientific information relevant to the species status report under consideration pursuant to section 7.1.

Initiation of delisting process

- 6.1 Any one of the following events may initiate the delisting process:
 - 6.1.1 The agency determines that a species population may no longer be in danger of failing, declining, or vulnerable, pursuant to section 3.3.
 - 6.1.2 The agency receives a petition from an interested person. The petition should be addressed to the director. It should set forth specific evidence and scientific data which shows that the species may no longer be failing, declining, or vulnerable, pursuant to section 3.3. Within 60 days, the agency shall either deny the petition, stating the reasons, or initiate the delisting process.

6.1.3 The commission requests the agency review a species of concern.

6.2 Upon initiation of the delisting process the agency shall publish a public notice in the Washington Register, and notify those parties who have expressed their interest to the department, announcing the initiation of the delisting process and calling for scientific information relevant to the species status report under consideration pursuant to section 7.1.

Species status review and agency recommendations

7.1 Except in an emergency under 5.1.3 above, prior to making a classification recommendation to the commission, the agency shall prepare a preliminary species status report. The report will include a review of information relevant to the species' status in Washington and address factors affecting its status, including those given under section 3.3. The status report shall be reviewed by the public and scientific community. The status report will include, but not be limited to an analysis of:

7.1.1 Historic, current, and future species population trends

7.1.2 Natural history, including ecological relationships (e.g. food habits, home range, habitat selection patterns).

7.1.3 Historic and current habitat trends.

7.1.4 Population demographics (e.g. survival and mortality rates, reproductive success) and their relationship to long term sustainability.

7.1.5 Historic and current species management activities.

7.2 Except in an emergency under 5.1.3 above, the agency shall prepare recommendations for species classification, based upon scientific data contained in the status report. Documents shall be prepared to determine the environmental consequences of adopting the recommendations pursuant to requirements of the State Environmental Policy Act (SEPA).

7.3 For the purpose of delisting, the status report will include a review of recovery plan goals.

Public review

8.1 Except in an emergency under 5.1.3 above, prior to making a recommendation to the commission, the agency shall provide an opportunity for interested parties to submit new scientific data relevant to the status report, classification recommendation, and any SEPA findings.

8.1.1 The agency shall allow at least 90 days for public comment.

8.1.2 The agency will hold at least one Eastern Washington and one Western Washington public meeting during the public review period.

Final recommendations and commission action

- 9.1 After the close of the public comment period, the agency shall complete a final status report and classification recommendation. SEPA documents will be prepared, as necessary, for the final agency recommendation for classification. The classification recommendation will be presented to the commission for action. The final species status report, agency classification recommendation, and SEPA documents will be made available to the public at least 30 days prior to the commission meeting.
- 9.2 Notice of the proposed commission action will be published at least 30 days prior to the commission meeting.

Periodic species status review

- 10.1 The agency shall conduct a review of each endangered, threatened, or sensitive wildlife species at least every five years after the date of its listing. This review shall include an update of the species status report to determine whether the status of the species warrants its current listing status or deserves reclassification.
- 10.1.1 The agency shall notify any parties who have expressed their interest to the department of the periodic status review. This notice shall occur at least one year prior to end of the five year period required by section 10.1.
- 10.2 The status of all delisted species shall be reviewed at least once, five years following the date of delisting.
- 10.3 The department shall evaluate the necessity of changing the classification of the species being reviewed. The agency shall report its findings to the commission at a commission meeting. The agency shall notify the public of its findings at least 30 days prior to presenting the findings to the commission.
- 10.3.1 If the agency determines that new information suggests that classification of a species should be changed from its present state, the agency shall initiate classification procedures provided for in these rules starting with section 5.1.
- 10.3.2 If the agency determines that conditions have not changed significantly and that the classification of the species should remain unchanged, the agency shall recommend to the commission that the species being reviewed shall retain its present classification status.
- 10.4 Nothing in these rules shall be construed to automatically delist a species without formal commission action.

Recovery and management of listed species

- 11.1 The agency shall write a recovery plan for species listed as endangered or threatened. The agency will write a management plan for species listed as sensitive. Recovery and management plans shall address the listing criteria described in sections 3.1 and 3.3, and shall include, but are not limited to:
- 11.1.1 Target population objectives

- 11.1.2 Criteria for reclassification
 - 11.1.3 An implementation plan for reaching population objectives which will promote cooperative management and be sensitive to landowner needs and property rights. The plan will specify resources needed from and impacts to the department, other agencies (including federal, state, and local), tribes, landowners, and other interest groups. The plan shall consider various approaches to meeting recovery objectives including, but not limited to regulation, mitigation, acquisition, incentive, and compensation mechanisms.
 - 11.1.4 Public education needs
 - 11.1.5 A species monitoring plan, which requires periodic review to allow the incorporation of new information into the status report.
- 11.2 Preparation of recovery and management plans will be initiated by the agency within one year after the date of listing.
- 11.2.1 Recovery and management plans for species listed prior to 1990 or during the five years following the adoption of these rules shall be completed within 5 years after the date of listing or adoption of these rules, whichever comes later. Development of recovery plans for endangered species will receive higher priority than threatened or sensitive species.
 - 11.2.2 Recovery and management plans for species listed after five years following the adoption of these rules shall be completed within three years after the date of listing.
 - 11.2.3 The agency will publish a notice in the Washington Register and notify any parties who have expressed interest to the department interested parties of the initiation of recovery plan development.
 - 11.2.4 If the deadlines defined in sections 11.2.1 and 11.2.2 are not met the department shall notify the public and report the reasons for missing the deadline and the strategy for completing the plan at a commission meeting. The intent of this section is to recognize current department personnel resources are limiting and that development of recovery plans for some of the species may require significant involvement by interests outside of the department, and therefore take longer to complete.
- 11.3 The agency shall provide an opportunity for interested public to comment on the recovery plan and any SEPA documents.

Classification procedures review

- 12.1 The agency and an ad hoc public group with members representing a broad spectrum of interests, shall meet as needed to accomplish the following:

- 12.1.1 Monitor the progress of the development of recovery and management plans and status reviews, highlight problems, and make recommendations to the department and other interested parties to improve the effectiveness of these processes.
- 12.1.2 Review these classification procedures six years after the adoption of these rules and report its findings to the commission.

Authority

- 13.1 The commission has the authority to classify wildlife as endangered under RCW 77.12.020. Species classified as endangered are listed under WAC 232-12-014, as amended.
- 13.2 Threatened and sensitive species shall be classified as subcategories of protected wildlife. The commission has the authority to classify wildlife as protected under RCW 77.12.020. Species classified as protected are listed under WAC 232-12-011, as amended.

[Statutory Authority: RCW 77.12.040. 98-05-041 (Order 98-17), § 232-12-297, filed 2/11/98, effective 3/14/98. Statutory Authority: RCW 77.12.020. 90-11-066 (Order 442), § 232-12-297, filed 5/15/90, effective 6/15/90.]